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ABSTRACT

This addendum was created to reflect the recommendations of the Mathematics Task Force that met in Arizona to make recommendations to the state Board of Education. The Mathematics Task Force recommended that a core curriculum be identified in the Mathematics Proficiency Standards that would be required of all high school students beginning in the ninth grade. The core curriculum is to be the basis for Arizona Instrument To Measure Standards (AIMS) Mathematics with remaining proficiency standards to be taught in a later, more advanced curriculum. This addendum lists all 26 standards and 76 performance objectives to be assessed on AIMS and contains sample questions. (SLD)

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AIMS MATHEMATICS ADDENDUM

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AIMS Mathematics Addendum

On April 24, 2000, the Arizona state Board of Education passed an amendment with regard to the number of mathematics credits necessary for graduation from high school and the years in school during which these classes are to be taken. This amendment, which is effective fall, 2000, reads as follows:

> "Effective with the graduating class of 2004, the two required math credits shall be taken consecutively beginning with the ninth grade and course content shall reflect Academic Standards preparation for proficiency at the high school level."

Based on this amendment, a Mathematics Task Force was assembled to study the Mathematics Proficiency Level Standards. The purpose of this meeting was to evaluate the Standards with regard to the Board's amendment and to make recommendations regarding the Standards, the two-credit AIMS-level mathematics requirement for graduation, and the impact on AIMS. The recommendations of the Mathematics Task Force to revise the AIMS mathematics blueprint were presented to, and approved by, the state Board of Education at the state Board meeting on June 26, 2000.

Ideally, the Mathematics Task Force desires all students to be exposed to all 38 concepts and 143 performance objectives that represent the Mathematics Proficiency Standards document during the students' high school careers. However, we recognize that teaching (and learning) the entire document to all students may be outside the scope and sequence of the clearly defined two-credit mathematics instruction that is required. Nevertheless, it should be noted that the Mathematics Proficiency Standards document itself DID NOT CHANGE. The purpose of the Mathematics Task Force was to clearly *identify* the Concepts and Performance Objectives for which <u>all students will be held accountable on AIMS in order to receive a diploma</u>, given the recent decision of the Board. There are 26 concepts and 99 performance objectives in the core curriculum. Of these, all 26 concepts and 76 performance objectives will be assessed on AIMS. We are calling these specific concepts "core" concepts. See our web page below for a look at the complete document.

http://www.ade.az.gov/standards/math/PublicRevisedBlueprint6_26.pdf

The following pages reflect the changes made to the AIMS Mathematics blueprint as a result of these decisions. Some concepts and performance objectives have been deleted from or added to the previous blueprint. For concepts and performance objectives that have been added, we are including some representative sample questions.

Rationale for the *AIMS Mathematics Addendum*

The Arizona Department of Education (ADE) had already printed 125,000 copies of the *High School Student Guide to AIMS* prior to the adoption of the Mathematics Task Force recommendations in June. Since the only changes to the guide are in the Mathematics content area, and only a few changes are required, we are sending this addendum in conjunction with the guide.

Concepts and Performance Objectives
Included on the Revised AIMS Mathematics Blueprint
With Sample Questions For Newly Included P.O.'s

In the table below, ALL 26 concepts and 76 p.o.'s to be assessed on AIMS are listed. Keep in mind that there are 23 other p.o.'s that are in the core curriculum that are *not* assessed on AIMS. (However, all 26 concepts in the core curriculum will be assessed on AIMS. See our web page, as noted on page 1 of this document, for a look at the complete document.) Some of these 26 concepts and 76 p.o.'s were not on the *previous* AIMS mathematics blueprint. They are bolded and marked "NEW" in this table. As is the case in the original guide, a few p.o.'s were selected for which sample questions were created as examples of how a particular p.o. may be assessed on AIMS. If there is a sample question given in this packet, it will be marked "New Sample Question #___." Many others WERE on the previous AIMS mathematics blueprint - these are marked "Same" and are not bolded. If there are sample questions in the original guide for a particular p.o., they are marked "Original Sample Question #___." PLEASE NOTE: Although some of the original sample questions are in short answer format, AIMS Mathematics will ONLY have multiple choice format.

Concept	P.O.	Status	Sample Question #____
1M-P1		Same	
	1	Same	Original Sample Question #1
1M-P2		Same	
	1	**NEW**	**New Sample Question #1**
	3	**NEW**	**New Sample Question #2**
	4	**NEW**	
	5	Moved to 4M-P4.PO4	
	6	Same	
	7	Same	
	8	Same	Original Sample Question #2
2M-P1		Same	
	1	Same	Original Sample Question #8
	2	NEW	Original Sample Question #5
	4	NEW	Original Sample Question #6
	5	**NEW**	
	6	Same	Original Sample Question #3
2M-P3		Same	
	1	**NEW**	**New Sample Question #3**
	3	Same	

Concept	P.O.	Status	Sample Question #____
2M-P4		Same	
	1	**NEW**	**New Sample Question #4**
	2	**NEW**	
	3	Same	
2M-P8		Same	
	1	**NEW**	
2M-P11		**NEW**	
	1	**NEW**	**New Sample Question #5**
	3	**NEW**	
3M-P1		Same	
	2	Same	
3M-P2		Same	
	3	**NEW**	**New Sample Question #6**
3M-P4		Same	
	1	Same	Original Sample Question #16
	2	Same	
	3	Same	
	4	Same	Original Sample Question #9

Concept	P.O.	Status	Sample Question #____
3M-P6		Same	
	1	Same	
	2	Same	Original Sample Question #17
	3	Same	Original Sample Question #11
	4	Same	
	6	Same	
	7	Same	
	9	Same	Original Sample Question #10
	10	Same	
	11	Same	Original Sample Question #18
	13	NEW	
	14	Same	
3M-P7		Same	
	1	Same	
	2	Same	Original Sample Question #15
	3	NEW	
3M-P8		Same	
	1	Same	Original Sample Question #14
	2	Same	
3M-P9		Same	
	2	NEW	New Sample Question #7
4M-P1		Same	
	1	Same	Original Sample Question #23
	2	Same	
	3	Same	
4M-P2		Same	
	1	Same	
	2	Same	
	3	Same	Original Sample Question #21
	4	Same	
	6	Same	
	7	Same	Original Sample Question #24
	8	Same	Original Sample Question #19

Concept	P.O.	Status	Sample Question #____
4M-P3		Same	
	1	Same	
	3	Same	
	4	NEW	New Sample Question #8
4M-P4		Same	
	1	Same	Orig. Sample Quests. #22 & 25
	2	Same	
	3	Same	
	4	Same	
4M-P5		Same	
	1	Same	Original Sample Question #20
4M-P6		Same	
	1	Same	
	2	Same	
5M-P3		Same	
	2	Same	
	3	Same	Original Sample Question #26
5M-P4		Same	
	1	Same	
	2	Same	
	4	Same	
6M-P1		Same	
	2	Same	
6M-P2		Same	
	2	NEW	New Sample Question #9
	3	Same	
	4	NEW	
6M-P3		Same	
	1	Same	
6M-P5			
	1	NEW	New Sample Question #10
	2	Same	

NEW SAMPLE QUESTIONS

STANDARD 1: Number Sense

Question 1 (assesses concept 1.2.1 - determine a rational estimate of an irrational number)

Which of the following is the best estimate of $\sqrt{12}$?

A. 2.5 B. 3
C. 3.5 D. 4

Question 2 (assesses concept 1.2.3 - solve real-world problems using absolute value)

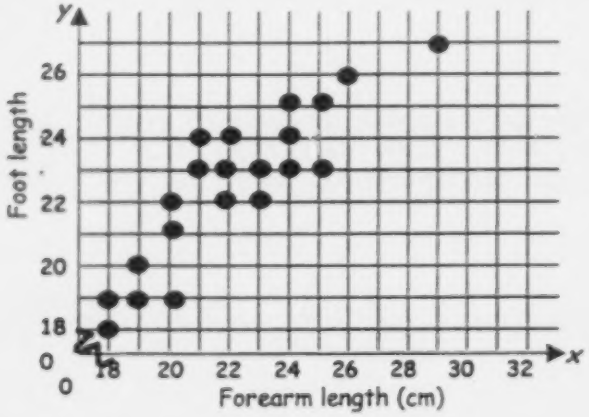
A submarine is 285 feet under the surface of the ocean. A helicopter is flying at 4,500 feet above sea level. Given that the helicopter is directly above the submarine, how far apart are they?

A. 285 feet B. 4,215 feet
C. 4,785 feet D. 4,500 feet

STANDARD 2: Data Analysis and Probability

Question 3 (assesses concept 2.3.1 - draw a line which closely fits a scatter plot)

Examine the graph below which shows the forearm lengths and foot lengths of 18 students in an algebra class.



In order to approximate the best fitting line, which two points should be used to create the equation representing this line?

A. (18, 18) and (29, 27) B. (23, 22) and (23, 23)
C. (21, 23) and (25, 23) D. (19, 20) and (26, 26)

Question 4 (assesses concept 2.4.1 - differentiate between sampling and census)

Which of the following is an example of the use of a census?

A. All the students at XYZ High School are asked whether they ride the bus to school.
B. All the juniors in a government class are asked their opinion about changing the school mascot.
C. All the seniors are asked if they like calculus class.
D. All the girls in an algebra class are asked to participate in a survey.

Question 5 (assesses concept 2.11.1 - apply the concepts of mean, median, mode, and range to draw conclusions about data)

Nutritionists often recommend a diet that is low in fat. The table below lists the approximate fat content of some breads and crackers.

Breads & Crackers	Fat Content Per Serving* (g)
Cracked wheat bread	0.9
Whole wheat bread	1.1
Pita bread	0.6
Matzo	0.3
Graham cracker	0.5
Corn muffin	4.0
Rice cake	0.3
Tortilla	1.1
Bran muffin	5.1
Pumpernickel	1.1
*Fat content per serving may vary by manufacturer	

Adapted from "Integrated Mathematics," 1995, Houghton Mifflin Company.

What is the median of this data set?

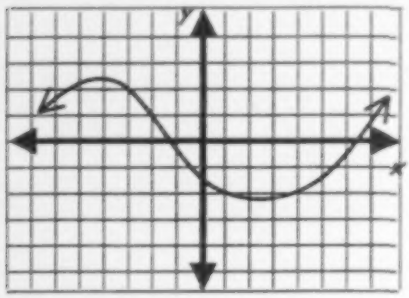
A. 0.9 B. 1.0
C. 1.1 D. 1.5

STANDARD 3: Patterns, Algebra and Functions

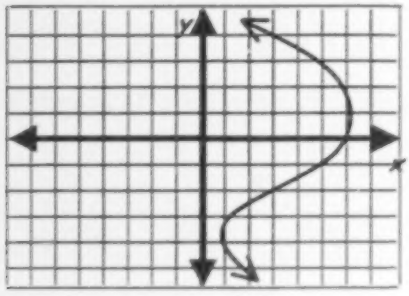
Question 6 (assesses concept 3.2.3 - determine whether a relation is a function given the graphical representation)

Which graph below represents a function?

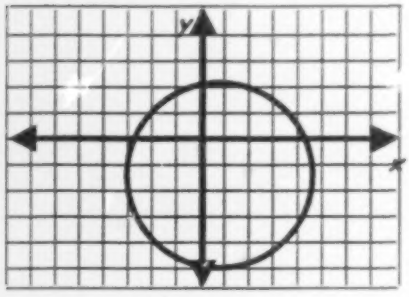
A.



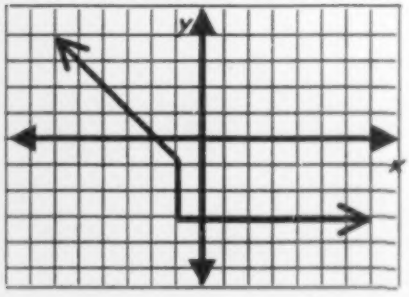
B.



C.

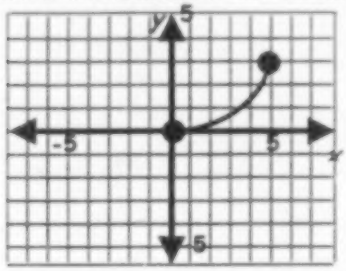


D.



Question 7 (assesses concept 3.9.2 - determine the domain and range of a relation, given the graph or a set of points)

What is the domain of the relation below?

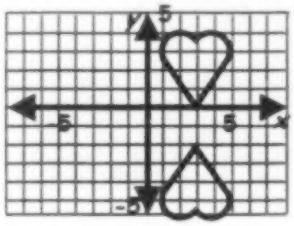


A. $y \leq 0$
B. $0 \leq x \leq 5$
C. $x \leq 0$
D. $0 \leq y \leq 3$

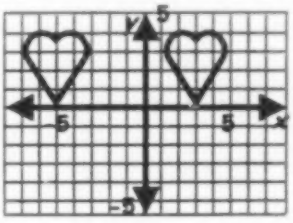
STANDARD 4: Geometry

Question 8 (assesses 4.3.4 - sketch the planar figure that is the result of a given transformation)

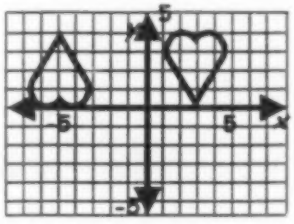
Which of the following graphs represents a reflection of the figure about the line $x = -1$?



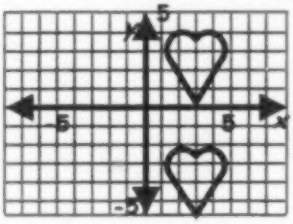
A.



B.



C.



D.

STANDARD 5: Measurement and Discrete Mathematics

NOTE: There are no new concepts or performance objectives in Standard 5.

STANDARD 6: Mathematical Structure/Logic

Question 9 (assesses concept 6.2.2 - draw a simple valid conclusion from a given *if...then* statement...)

If an angle's measure is between 0° and 90°, then it is an acute angle. Jenny measured the angle made by two walls in her home and found the angle to be 84°. Which of the following conclusions is most reasonable?

A. Jenny needs to measure another angle.
B. The angle is a right angle.
C. The angle is an obtuse angle.
D. The angle is an acute angle.

Question 10 (assesses concept 6.5.1 - determine whether a given algebraic expression and a possible simplified form are equivalent)

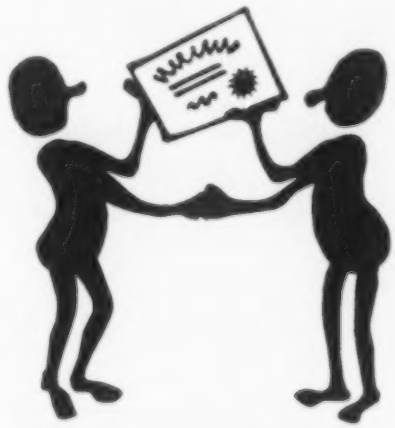
Which of the following is equivalent to the expression $2(3x - 2y) + 4y$

A. $6x$
B. $6x + 8y$
C. $6x - 2y$
D. $2xy + 4y$

* *

MATHEMATICS KEY

Question #1.	C
Question #2.	C
Question #3.	D
Question #4.	A
Question #5.	B
Question #6.	A
Question #7.	B
Question #8.	B
Question #9.	D
Question #10.	A



You CAN do it!

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